

General

Guideline Title

Intrauterine growth restriction: screening, diagnosis, and management.

Bibliographic Source(s)

Lausman A, Kingdom J, Maternal Fetal Medicine Committee. Intrauterine growth restriction: screening, diagnosis, and management. J Obstet Gynaecol Can. 2013 Aug;35(8):741-8. [55 references] [PubMed](#)

Guideline Status

This is the current release of the guideline.

Recommendations

Major Recommendations

The quality of evidence (I-III) and classification of recommendations (A-E, L) are defined at the end of the "Major Recommendations" field.

Summary Statements

1. The definition of small-for-gestational age for a fetus in utero is an estimated fetal weight that measures <10th percentile on ultrasound. This diagnosis does not necessarily imply pathologic growth abnormalities, and may simply describe a fetus at the lower end of the normal range. (III)
2. Intrauterine growth restriction (IUGR) refers to a fetus with an estimated fetal weight <10th percentile on ultrasound that, because of a pathologic process, has not attained its biologically determined growth potential. (III) A clinical estimation of fetal weight or symphysis-fundal height has poor sensitivity and specificity and should not be relied upon to diagnose IUGR. IUGR should be considered in the differential diagnosis when the fetus is found to be small for gestational age. (II-1)
3. Effective screening for IUGR requires accurate dating and includes a review of the mother's menstrual history, relevant assisted reproductive technology information, and either a first trimester or early second trimester dating ultrasound. (I)
4. Symphysis-fundal height determination is of limited value in routine obstetrical care, but continues to be the only physical examination screening test available. (I)
5. Fetal weight determination in fetuses between the 10th and 90th percentiles by ultrasound biometry alone has at least a 10% error rate across gestation, but is effective equally when measuring with abdominal circumference alone or in combination with head size (biparietal diameter or head circumference) and/or femur length to establish an estimated fetal weight. (II-2)
6. Determining whether IUGR is symmetric or asymmetric is of less clinical importance than careful re-evaluation of fetal anatomy and uterine and umbilical artery Doppler studies. (I)
7. In women with risk factors for IUGR, uterine artery Doppler screening at 19 to 23 weeks may identify pregnancies at risk of antepartum stillbirth and preterm delivery due to IUGR and placental disease. (II-2)

8. In pregnancies in which IUGR due to uteroplacental vascular insufficiency is diagnosed, maternal surveillance for the development of severe preeclampsia with adverse features is warranted. (II-1)
9. Once surveillance of a fetus with IUGR is instituted, umbilical artery Doppler studies and biophysical profile scoring can be used as short-term predictors of fetal well-being. (I)
10. In the presence of abnormal umbilical artery Doppler studies, further investigation of the fetal circulatory system by Doppler examination of the middle cerebral artery, ductus venosus, and umbilical vein can be considered. (II-2)
11. For a fetus with IUGR, the decision for obstetrical intervention, including Caesarean section, in cases of abnormal fetal heart rate or malpresentation is largely based on fetal viability, as assessed by ultrasound. (II-2)
12. Maternal surveillance for the development of preeclampsia is warranted. (II-2)

Recommendations

1. Women should be screened for clinical risk factors for IUGR by means of a complete history. (II-2B)
2. Women should be counseled on smoking cessation at any time during pregnancy. (II-2A)
3. First and second trimester screening tests for aneuploidy may be useful tests of placental function. If two screening test results are abnormal, health care providers should be aware that the fetus is at increased risk of preterm IUGR and associated stillbirth. (II-1A)
4. If IUGR is suspected, further assessment can assist in making the diagnosis. If available, detailed ultrasound examination of the placenta (looking for evidence of a small, thickened placenta, or abnormal morphology) and uterine artery Dopplers should be considered at 19 to 23 weeks. In the absence of available diagnostic testing, closer surveillance should be offered. A maternal-fetal medicine consultation can be considered if the placenta appears abnormal on ultrasound, especially in the context of a growth-restricted fetus and abnormal uterine artery Doppler. In a rural setting, the caregiver needs to decide whether the patient should be delivered immediately, or whether transfer to a tertiary center is appropriate. A telephone consultation and telemedicine may help. (II-2A)
5. In women without risk factors for IUGR, comprehensive third trimester ultrasound examination including biophysical profile, fetal biometry, amniotic fluid volume, and umbilical artery Doppler studies is not recommended. (II-2D)
6. Low-dose aspirin should be recommended to women with a previous history of placental insufficiency syndromes including IUGR and preeclampsia. It should be initiated between 12 and 16 weeks' gestation and continued until 36 weeks. (I-A)
7. Low-dose aspirin should also be recommended to women with two or more current risk factors in pregnancy including, but not limited to, pre-gestational hypertension, obesity, maternal age >40 years, history of use of artificial reproductive technology, pre-gestational diabetes mellitus (type I or II), multiple gestation, previous history of placental abruption, and previous history of placental infarction. It should be initiated between 12 and 16 weeks' gestation and continued until 36 weeks. (I-A)
8. Umbilical artery Doppler studies are not recommended as a routine screening test in uncomplicated pregnancies. (I-E)
9. An ultrasound examination for estimated fetal weight and amniotic fluid volume should be considered after 26 weeks if the symphysis-fundal height measurement in centimeters deviates by 3 or more from the gestational age in weeks or there is a plateau in symphysis-fundal height. (II-2B)
10. In cases in which the fetus measures <10th percentile by estimated fetal weight or abdominal circumference measurement, the underlying cause of IUGR may be established by an enhanced ultrasound examination to include a detailed review of fetal anatomy, placental morphology, and Doppler studies of the uterine and umbilical arteries. (II-2A)
11. In cases of IUGR, determination of amniotic fluid volume should be performed to aid in the differential diagnosis of IUGR and increase the accuracy of the diagnosis of placental insufficiency. (II-2B)
12. Umbilical artery Doppler should be performed in all fetuses with an estimated fetal weight or an abdominal circumference <10th percentile. (I-A)
13. In pregnancies affected by IUGR, umbilical artery Doppler studies after 24 weeks may prompt intervention that reduces perinatal mortality and severe perinatal morbidity due to IUGR. (I-A)
14. In pregnancies in which IUGR has been identified, invasive testing to rule out aneuploidy may be offered where fetal abnormalities are suspected, soft markers are seen, or no supportive evidence of underlying placental insufficiency is evident. (II-2A)
15. In patients presenting with IUGR, maternal screening for infectious etiology may be considered. (II-2A)
16. When IUGR is diagnosed, surveillance should be initiated. Serial ultrasound estimation of fetal weight (every 2 weeks), along with umbilical artery Doppler studies should be initiated. If available, a placental assessment and other Doppler studies such as middle cerebral artery, umbilical vein, and ductus venosus can be performed. Increased frequency of surveillance may be required. (II-2A)
17. If fetal growth starts to plateau, amniotic fluid index starts to decline, or fetal tone or gross movements are diminished or absent, then more intensive surveillance (e.g., 2 to 3 times per week) or admission to hospital and delivery planning is required. (II-2A)
18. Abnormal umbilical cord Doppler (e.g., absent or reversed end-diastolic flow) in the presence of IUGR is an ominous finding that requires intervention and possible delivery. (I-A)
19. Cardiotocography (non-stress testing) performed antenatally as a test of fetal well-being should not be used in isolation to monitor fetuses with IUGR. (II-2E)

20. Maternal administration of corticosteroids is indicated if there is a significant possibility of delivery at <34 weeks' gestation, as administration may positively affect umbilical Doppler studies. (I-A)
21. If delivery was not indicated prior to 37 weeks in a patient diagnosed with IUGR, expectant management with close fetal and maternal surveillance versus delivery should be discussed after 37 weeks. (I-A)
22. Site of planned delivery should take into consideration facilities and expertise available at each institution including obstetricians, pediatricians or neonatologists as appropriate, anesthesiologists, and access to Caesarean section. (III-A)

Definitions:

Quality of Evidence Assessment*

I: Evidence obtained from at least one properly randomized controlled trial

II-1: Evidence from well-designed controlled trials without randomization

II-2: Evidence from well-designed cohort (prospective or retrospective) or case-control studies, preferably from more than one centre or research group

II-3: Evidence obtained from comparisons between times or places with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of treatment with penicillin in the 1940s) could also be included in this category

III: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees

*Adapted from the Evaluation of Evidence criteria described in the Canadian Task Force on Preventive Health Care.

Classification of Recommendations†

A. There is good evidence to recommend the clinical preventive action

B. There is fair evidence to recommend the clinical preventive action

C. The existing evidence is conflicting and does not allow to make a recommendation for or against use of the clinical preventive action; however, other factors may influence decision-making

D. There is fair evidence to recommend against the clinical preventive action

E. There is good evidence to recommend against the clinical preventive action

L. There is insufficient evidence (in quantity or quality) to make a recommendation; however, other factors may influence decision-making

†Adapted from the Classification of Recommendations criteria described in the Canadian Task Force on Preventive Health Care.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Intrauterine growth restriction

Guideline Category

Counseling

Diagnosis

Management

Risk Assessment

Screening

Clinical Specialty

Family Practice

Internal Medicine

Obstetrics and Gynecology

Intended Users

Advanced Practice Nurses

Nurses

Physician Assistants

Physicians

Guideline Objective(s)

To provide summary statements and recommendations and to establish a framework for screening, diagnosis, and management of pregnancies affected with intrauterine growth restriction (IUGR)

Target Population

Pregnant women with clinical risk factors for intrauterine growth restriction (IUGR) or with a confirmed diagnosis of IUGR

Interventions and Practices Considered

1. Screening for clinical risk factors for intrauterine growth restriction (IUGR) by means of a complete history
2. Counseling on smoking cessation at any time during pregnancy
3. First and second trimester screening tests for aneuploidy
4. Ultrasound examination of the placenta and uterine artery Dopplers at 19 to 23 weeks
5. Maternal–fetal medicine consultation
6. Comprehensive third trimester ultrasound examination including biophysical profile, fetal biometry, amniotic fluid volume, and umbilical artery Doppler studies (not recommended in women without risk factors for IUGR)
7. Low-dose aspirin in at-risk women
8. Invasive testing to rule out aneuploidy
9. Maternal screening for infectious etiology
10. Surveillance of IUGR, including serial ultrasound estimation of fetal weight, umbilical artery Doppler studies, placental assessment, and other Doppler studies such as middle cerebral artery, umbilical vein, and ductus venosus
11. Increased surveillance (e.g., 2 to 3 times per week) or admission to hospital and delivery planning as required
12. Antenatal cardiotocography (non-stress testing) as a test of fetal well-being (not recommended in isolation to monitor fetuses with IUGR)
13. Maternal administration of corticosteroids
14. Expectant management with close fetal and maternal surveillance versus delivery after 37 weeks
15. Choosing site of planned delivery, taking into consideration facilities and expertise available

Major Outcomes Considered

- Risk of intrauterine growth restriction (IUGR) and stillbirth in the third trimester
- Perinatal morbidity and mortality

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Searches of Unpublished Data

Description of Methods Used to Collect/Select the Evidence

Published literature in English was retrieved through searches of PubMed or MEDLINE, CINAHL, and The Cochrane Library in January 2013 using appropriate controlled vocabulary via MeSH terms (fetal growth restriction and small for gestational age) and key words (fetal growth, restriction, growth retardation, IUGR, low birth weight, small for gestational age). Results were restricted to systematic reviews, randomized control trials/controlled clinical trials, and observational studies. Grey (unpublished) literature was identified through searching the websites of health technology assessment and health technology related agencies, clinical practice guideline collections, clinical trial registries, and national and international medical specialty societies.

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Quality of Evidence Assessment*

I: Evidence obtained from at least one properly randomized controlled trial

II-1: Evidence from well-designed controlled trials without randomization

II-2: Evidence from well-designed cohort (prospective or retrospective) or case-control studies, preferably from more than one centre or research group

II-3: Evidence obtained from comparisons between times or places with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of treatment with penicillin in the 1940s) could also be included in this category

III: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees

*Adapted from The Evaluation of Evidence criteria described in the Canadian Task Force on Preventive Health Care.

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review

Description of the Methods Used to Analyze the Evidence

The quality of evidence in this document was rated using the criteria described in the Report of the Canadian Task Force on Preventive Health Care (see the "Rating Scheme for the Strength of the Evidence" field).

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Not stated

Rating Scheme for the Strength of the Recommendations

Classification of Recommendations†

A. There is good evidence to recommend the clinical preventive action

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C. The existing evidence is conflicting and does not allow to make a recommendation for or against use of the clinical preventive action; however, other factors may influence decision-making

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†Adapted from the Classification of Recommendations criteria described in the Canadian Task Force on Preventive Health Care.

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Internal Peer Review

Description of Method of Guideline Validation

This clinical practice guideline has been prepared by the Maternal Fetal Medicine Committee and approved by the Executive and Council of the Society of Obstetricians and Gynaecologists of Canada.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Implementation of the recommendations in this guideline should increase clinician recognition of intrauterine growth restriction (IUGR) and guide intervention where appropriate. Optimal long-term follow-up of neonates diagnosed as IUGR may improve their long-term health.

Potential Harms

Not stated

Qualifying Statements

Qualifying Statements

This document reflects emerging clinical and scientific advances on the date issued and is subject to change. The information should not be construed as dictating an exclusive course of treatment or procedure to be followed. Local institutions can dictate amendments to these opinions. They should be well documented if modified at the local level. None of these contents may be reproduced in any form without prior written permission of the Society of Obstetricians and Gynaecologists of Canada (SOGC).

Implementation of the Guideline

Description of Implementation Strategy

An implementation strategy was not provided.

Implementation Tools

Foreign Language Translations

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

Lausman A, Kingdom J, Maternal Fetal Medicine Committee. Intrauterine growth restriction: screening, diagnosis, and management. J Obstet Gynaecol Can. 2013 Aug;35(8):741-8. [55 references] [PubMed](#)

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2013 Aug

Guideline Developer(s)

Society of Obstetricians and Gynaecologists of Canada - Medical Specialty Society

Source(s) of Funding

Society of Obstetricians and Gynaecologists of Canada

Guideline Committee

Maternal Fetal Medicine Committee

Composition of Group That Authored the Guideline

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Financial Disclosures/Conflicts of Interest

Disclosure statements have been received from all members of the committee.

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available from the [Society of Obstetricians and Gynaecologists of Canada \(SOGC\) Web site](#) . Also available in French from the [SOGC Web site](#) .

Print copies: Available from the Society of Obstetricians and Gynaecologists of Canada, La société des obstétriciens et gynécologues du Canada (SOGC) 780 promenade Echo Drive Ottawa, ON K1S 5R7 (Canada); Phone: 1-800-561-2416.

Availability of Companion Documents

None available

Patient Resources

None available

NGC Status

This NGC summary was completed by ECRI Institute on November 19, 2013. The information was verified by the guideline developer on December 13, 2013.

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